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THE U.S. BUSINESS OUTLOOK, LONG-TERM

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Though a myriad of intervening events -- oil embargoes, presidential elections, and shifts in ocean currents -- distort short-term patterns of economic activity, a few factors dominate the character of the economy over extended periods of time. Over the next fifteen years, demography, energy, and inflation will play that role. Together, they point to a protracted period of slow growth and to a shift in the composition of economic activity toward investment. The prospects for inflation are more difficult to gauge but the burden of proof is on those who argue that inflation will be beaten in the short run.

Restrained Growth

Over decades, the growth path of sucessful economies is defined more by the limits to growth than the pattern of demand. Certainly, that has been true of the U.S. through much of its history. In turn, economic potential, in the simplest sense, is determined by how much people work and how productive their efforts are. Table 1 underscores this simple observation by reporting the history of the last thirty years and projecting the next fifteen.

Table 1: Sources of Growth

	(% Change at Annual Rates)			
	1948-58	1958-68	1968-78	1980-95
Adult Population	1.1	1.5	1.7	0.9
Labor Force	1.2	1.6	2.2	1.3
Employment	0.9	1.9	2.0	1.5
Average Hours	-0.4	-0.2	-0.5	-0.3
Labor Input	0.5	1.7	1.5	1.1
Productivity	2.9	2.7	1.4	1.9
Real GNP	3.4	4.4	2.9	3.0

Four historically important factors are emphasized by the Table. First, the appearance of the postwar baby boom in the job market in the '60s and '70s was an important source of growth, adding one-half percentage point to the growth rate of the adult population. Second, the surge in labor force participation, particularly among women, added another one-half percentage point to potential growth over the 1968-78 period. Third, average weekly hours per worker have declined steadily reflecting labor's desire for increased leisure time. Finally, productivity growth has dropped precipitously, shaving almost 1½ percentage points from potential real growth in the '70s compared to the '50s and '60s. As a consequence, real growth dropped a full percentage point in the 1968-78 period compared to the preceding twenty years.

Over the next fifteen years these same factors will shape the course of economic growth. The surge in the adult population that accompanied the maturation of the postwar baby boom is now essentially complete. From 1980 to 1995, the adult population will rise at only 0.9% annually, almost a full percentage point below the average of the 1968-78 period. Labor force participation should continue to rise. But the economy was already near full employment at the close of 1978 so significantly greater employment gains than labor force growth cannot be expected. And average weekly hours are likely to continue to decline as labor opts for increased leisure time as standards of living rise. As a consequence, over the next fifteen years, labor inputs seem likely to rise only 1.1% per year, 0.5 percentage point below the 1958-78 average.

To achieve anything like the 3½ - 4% growth of the '50s and '60s, or even the 3% of the '70s, will require a sharp increase in productivity growth. Some gains can be expected. Unfortunately, some of the factors that depressed productivity in the 1970s will continue to impact the 1980s. True, the aging of the labor force implies an increase in experience that should spur productivity. The share of capital spending diverted to pollution control and safety and health should

decline after the 1970's catch up to new standards imposed by legislation. And the 1968-78 period was marked by two major contractions. But uncertainty about the future has raised the risk associated with future returns. This seems sure to restrain capital spending and research and development expenditures. But, with labor force growth moderating, the ratio of capital to labor, an important source of productivity growth, can still be expected to rise. Perhaps most important, the new reality of cartel-priced petroleum will divert investment to energy projects, and will accelerate the rate at which the current capital stock becomes obsolete. While the economy is retooled for energy efficiency, productivity growth will be restrained. In addition, energy availability may be an absolute constraint. Thus, we expect 1980-85 productivity growth to climb above its 1968-78 trough but to remain below the average of the preceding two decades.

These factors, principally fading labor force growth and mildly recovering productivity growth, imply that the economy's potential, and hence real growth, over the next fifteen years will be more sluggish than during any extended period of the postwar era. We look for real growth to average no more than 3% over the next fifteen years, one-half percentage point below the growth of the last three decades.

The implications of this conclusion for broad market conditions are quite direct. But it also has important political implications: sluggish growth breeds political pressure for change, as year after year voters' expectations of ever higher living standards are disappointed. It raises the odds of institutional change.

Energy Shifts the Composition of Activity

No economic change of the last decade has been more dramatic than the new reality of energy availability and prices. In one sense the energy issue is: Can we develop the new energy resources and the new energy-saving machinery which

will free us from the foreign oil cartel? However, in another sense, the issue is not "can we" but "how quickly will we" broach the energy problem. The new energy reality is too real to be ignored and to indefinitely delay economic response. Markets have reacted and will continue to do so. The capital spending corollary to the new energy reality is a capital spending boom. In a simple sense, only the uncertainty of the adjustment and the trauma of high inflation will restrain the pace of spending.

The U.S. will devote substantial resources to the resolution of the energy issue. And though this effort may seem to be of Herculean proportions, huge shifts in the use and supply of energy sources are not unprecedented. In 1850, only 9% of America's energy needs were supplied by coal; the other 91% came from wood. The figure for coal had doubled by the end of the decade, and had tripled by 1870. In 1910, three-fourths of U.S. energy consumption depended on coal, while only 6% was derived from petroleum. Yet over the next decade, while coal dependency was declining, petroleum consumption as a percentage of total energy usage doubled, and then doubled again during the following ten years. The relative use of coal, of course, has fallen precipitously since then, and petroleum has come to supply about half of our overall energy needs. The point, though, is that within the space of twenty years, America in the past had moved quickly from one energy source to another.

It is difficult to anticipate the same kind of energy substitution today as took place over the last century. But some substitution of energy sources and other inputs for energy and shifts in consumption will take place. As it does, there will be an investment boom in energy and energy-dependent industries. To fully achieve that, however, the economy must generate sufficient savings to provide the financial capital necessary to fund an investment boom and enough confidence to foster the required commitment to the future.

Business investment has hardly been a growth sector in recent times as companies, beleaguered by government regulations, consumerism, inflation, and a general slowing down of economic growth, have opted for cautious business strategies. Indeed, since the 1950s, investment as a proportion of gross national product has fallen by about one percentage point, to 14.9%.

The government must play a significant role in spurring the hoped-for boom, by providing incentives and in some cases funding for new energy initiatives. In addition, the government must play a positive indirect role by reducing its deficit spending and the public debt financing requirements that implies. Most important, the government must stabilize the economic environment, thereby reducing risk and building confidence.

Another area which could be a major source of increased savings and which is reliant on government policy is the foreign sector. The balance of payments deficits the U.S. has been running represent a tremendous outflow of funds to the rest of the world, funds which potentially could be used for domestic purposes, including investment. Effective energy policy would go a long way toward balancing our foreign account and increasing the availability of funds for investment.

There will be some stimulus for the household sector. The household savings rate, which has been falling over the past decade, will rise over the next fifteen years as the mean age of the adult population increases. The simple fact is that older people save more than younger people. Still, the improvement will add only a few tenths of a percentage point to the gross savings rate over the next two decades since personal savings accounts for only 30% of gross savings.

The new energy reality has produced substantial pressures for shifts in the composition of activity. These pressures will be realized as significant swings in the character of the economic environment for at least the next fifteen years.

Most important, it should provide the impetus for a capital spending boom as markets adjust and the depreciation of the current stock of capital is accelerated. As that occurs, physical and financial resources will shift away from other sectors of the economy. In our forecast, business capital spending averages almost 10.6% of gross national product from 1980 to 1995, the highest figure for any protracted period of the postwar period. The mirror image of that is a move toward balance in both the public and foreign sector and modestly fading consumption growth as the postwar baby boom becomes the middle age boom, saving more and spending less.

Inflation

The long-term bottom-line outlook on investment is that America will be in the black, because it must. By contrast, inflation -- the scourge of the '70s -- will end up in the red no matter how it is handled, and will thus continue to eat into America's economic fiber in the '80s. If the Federal Reserve mounts a frontal attack against inflation, we are in for an extended period of sluggish growth marked initially by high interest rates. Even with tight monetary policy, however, it will take half a decade to bring inflation down even to the 6% range.

The alternative, which sadly has been the norm, is that the problem will be pushed further off into the future. If this approach is continued, the inflation spiral will further raise the risks of doing business -- especially endangering investment, which of necessity must be based on long-term economic assessments -- and it will continue to undermine the confidence of consumers and foreign dollar holders alike. The result would be further destabilization of the economy, and possibly a crash/crisis program of monetary and fiscal constraint and/or stiff controls. Such a denouement to the inflation story would hardly be a happy one, either economically or politically.

Meanwhile, inflation has caused, and will likely continue to cause, institutional changes. Horrified by the rapid loss in the value of their dollars, people have turned increasingly to commodities -- gold, for example -- and to commodities markets. Uncertain about the future, some banks and house buyers have agreed to flexible-rate mortgages. Fearful that prices will continue to skyrocket, consumers are rushing to buy now and not a day later, and they don't mind getting up to their necks, if not way over their heads, in debt to do so. And while such buying habits are fine for business in the short run, at some point extenders of credit hold back, and the castle in the sand begins to crumble.

Someone, though, must benefit from inflation, since by definition inflation is an excessive creation of money, money which must end up in someone's pocket, somewhere. Unfortunately for America, many of those pockets are overseas, particularly of course, in oil-producing countries: From 1970 to 1978, import prices shot up by 248%, while U.S. export prices rose by 205%. Meanwhile, as a share of gross national product, imports in the same time period jumped from 6% to more than 10%. So we are spending a greater share of our income for higher-priced imports, transferring income abroad.

In the near term, there is simply no acceptable solution to this transfer of wealth. The OPEC cartel is a success. It can extract its price and U.S. wealth. Inflating the U.S. economy to veil the OPEC oil price increases merely raises the uncertainty of the future, restraining our commitment to investment in the future.

The long-term prospects for inflation are difficult to gauge, tied as they are to the politics of monetary and fiscal policy, social, economic, and political institutions, and the preferences and perceptions of the public. If history repeats itself, though, the trend will be clearly rising rates of inflation. Even in the intermediate term, the momentum of inflation will not be quickly reversed. At best, inflation will average 7% over the next five years.

Summary

The current cyclical episode is drawn from two of the same factors that will shape the economic environment for the foreseeable future: energy and inflation, and hence underscores their importance. The balance of these twin dimensions of the current and prospective economic condition will largely determine the pace of the inevitable adjustment to the new reality of energy prices and availability. Inflation cannot deny the energy transition but inflation will restrain it. Because of inflation's momentum, that restraint will be real in the early '80s. Beyond then, we look for the transition to accelerate, for the sources and uses of energy to shift, and for the composition of activity to adjust accordingly.

The remaining dominant factor in the long-term outlook is demography. It is both an important supply constraint and determinant of demand. The "middle aging" of the postwar baby boom means much to the next fifteen years: among other things, slower labor force growth, high productivity gains, rising savings rates, and increased home ownership. It too will affect the composition of activity. More importantly, it will restrain the pace of growth.

Table 2: Projections of Key Economic Indicators to 1995

	Gross National Product Billions, 1979$	Personal Consumption Expenditures Billions, 1979$	Nonresidential Fixed Investment Billions, 1979$	GNP Deflator 1979 = 100
1967	$1,671.7	$1,000.6	$171.7	47.6
1968	1,744.8	1,050.7	179.2	49.8
1969	1,789.6	1,087.2	189.6	52.3
1970	1,783.8	1,109.6	182.5	55.1
1971	1,837.2	1,147.8	179.2	57.9
1972	1,942.7	1,216.0	193.8	60.3
1973	2,048.7	1,273.5	217.3	63.8
1974	2,020.2	1,261.9	216.7	69.9
1975	1,994.5	1,285.0	188.5	76.6
1976	2,111.8	1,361.3	197.4	80.6
1977	2,223.8	1,429.5	214.5	85.4
1978	2,321.1	1,494.3	232.4	91.7
Forecast				
1979	2,346.7	1,510.4	250.9	100.0
1980	2,343.9	1,510.6	247.1	108.6
1981	2,449.4	1,575.3	259.0	117.3
1982	2,547.2	1,634.8	271.9	126.2
1983	2,628.9	1,690.4	277.9	135.3
1984	2,706.3	1,742.8	284.8	144.5
1985	2,783.5	1,795.1	292.5	154.0
1986	2,861.4	1,845.0	301.0	163.9
1987	2,941.6	1,895.2	310.3	174.2
1988	3,023.8	1,944.4	320.6	185.0
1989	3,108.6	1,995.0	331.8	196.3
1990	3,195.5	2,046.9	344.1	208.1
1995	3,686.6	2,350.0	416.6	271.9

Table 2: Projections of Key Economic Indicators to 1995 - Continued

	Population at Mid-year (Millions)	Households at Mid-year (Millions)	Total Employment (Millions)	Industrial Production 1967 = 100
1967	198.7	59.2	74.4	100.0
1968	200.7	60.8	75.9	106.3
1969	202.7	62.2	77.9	111.1
1970	204.9	63.4	78.6	107.8
1971	207.1	64.8	79.1	109.6
1972	208.8	66.7	81.7	119.7
1973	210.4	68.2	84.4	129.8
1974	211.9	69.8	85.9	129.3
1975	213.6	71.1	84.8	117.8
1976	215.1	72.9	87.5	129.8
1977	216.7	74.1	90.5	137.1
1978	218.4	76.0	94.4	145.2
Forecast				
1979	220.2	78.2	96.7	148.7
1980	222.2	80.3	97.5	145.5
1981	224.2	82.0	99.6	154.2
1982	226.3	83.8	101.5	161.4
1983	228.5	85.6	103.3	167.2
1984	230.7	87.5	105.0	172.8
1985	232.9	89.4	106.6	178.3
1986	235.1	91.2	108.2	184.0
1987	237.2	92.9	109.8	189.9
1988	239.4	94.7	111.3	196.0
1989	241.5	96.4	112.8	202.4
1990	243.5	98.0	114.3	209.2
1995	252.8	105.8	122.1	248.5

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Introduction

The U.S. economy has just come through a rocky decade. Mild recession marked the beginning of the period; deep recession dominated the middle; and as the decade ended, the economy moved toward yet another serious recession. Thus, the 1970s were bracketed, and punctuated sharply in the middle, by declines in national well-being.

To make things worse, the weak 1970s' economy failed to blunt the sting of inflation. Instead, inflation galloped ahead at double-digit rates, leaving economic theorists in the dust. The dual plague of the 1970s--slow, erratic growth combined with rapid price increases--raises disquieting questions about America's longrun economic prospects: Were the 1970s an aberration, a victim of the OPEC shock, soon to be regarded as a curiosity and out of keeping with the American economic tradition? Or, conversely, were the 1970s a harbinger of economic disorders to come? More generally, is the American economy capable of getting back on a path of stable, vigorous growth?

This report explores these questions, following a four-pronged plan: In the first part, developments in the 1970s are viewed in the context of post-World War II growth. This discussion sets the stage for the report's second section which analyzes the potential for growth in the 1980s, given projected increases in the labor force and in investment in plants and equipment. The third section then points out the choices

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society will have to make if maximum potential growth is to be attained in the '80s. In the final section, forecasts to 1995 are presented for gross national product, consumption, investment, industrial production, population, households, employment, and inflation.

I. Perspective on Growth

Except during the Great Depression of the 1930s, Americans over the past century have enjoyed almost continual improvements in living standards. And until recently, they have not had to worry much about skyrocketing prices. The historical record of growth and inflation, excluding the Depression and the World War II period, is presented in Table I.

Table I. Inflation and Growth, 1889-1980

Period	----Average Annual % Change----- Real Growth	Inflation
1889-1929	2.7%	1.4%
1950-1960	3.3	2.5
1960-1970	3.9	2.9
1970-1980 (est.)	2.7	7.0
1889-1970	3.2	2.2

SOURCES: Historical Statistics of the United States; Economic Report of the President; McGraw-Hill Publications Co. Dept. of Economics.

NOTE: Inflation is measured by the gross national product implicit price deflator.

Clearly, the decade of the '70s seems out of context, especially when compared to growth and inflation in the rest of the post-World War II era. For whatever consolation it's worth, growth in the 1970s matched that of 1889-1929, the period when America became the world's leading economy. But at the same time, inflation in that earlier period was insignificant compared to the 1970-80 rate.

More important, the performance of the U.S. economy in the 1970s leaves something to be desired compared to the 1960s and the 1950s. Table II provides a deeper understanding of those three decades.

Table II. Productivity, Capital, and Labor, 1950-80

Period	Average Annual % Change		
	Productivity	Capital Stock	Labor Hours
1950-60	2.6%	3.8%	0.4%
1960-70	2.8	4.6	1.0
1970-80 (est.)	1.2	3.0	1.7

SOURCES: Economic Report of the President; U.S. Dept. of Commerce; McGraw-Hill Publications Co. Dept. of Economics.

NOTES: Data for productivity and labor hours refer to the private business sector. Capital stock is net capital stock.

The message contained in Table II is that compared to the two previous decades, the 1970s were characterized by sluggish productivity and capital stock growth coupled with rapid labor force growth. By contrast, the U.S. throughout most of its history has employed more and more plant and equipment per worker in order to raise productivity and thereby enjoy strong economic growth.

(Note that the numbers in Table II are annual average growth rates, so that small differences become important when the rates are compounded over a 10-year period. For example, if productivity continued to grow by an average 2.8% per year in the 1970s, instead of 1.2%, the level of output per hour today would be about 17% higher than it is.)

In addition to outfitting each worker with more capital equipment, the U.S. traditionally has been able to make that equipment more productive by incorporating in it engineering ingenuity and new ideas generated by research and development (R&D). Thus, the newer the capital stock is, the more new ideas and new engineering improvements it can contain, and the more spent on R&D, of course, the more likely it is that new ideas will be generated.

The U.S. slightly reduced the average age of its capital stock in the 1970s (compared to the 1960s), and managed to keep more than one-third

Table III. Productivity Indicators

Period	Average Age of Net Capital Stock (Years)	% Capital Stock Less Than 5 Years Old	R&D as % Of Business Sales	Ratio of Output to Capital
1950-60	8.0 Yrs.	NA%	2.0%	1.6
1960-70	7.2	36	2.8	1.6
1970-80	7.1	36	2.3	1.6

SOURCES: U.S. Dept. of Commerce; McGraw-Hill Publications Co. Dept. of Economics.

NOTES: Data for percent of capital stock less than five years old are based on 1966 and 1976 surveys. R&D figures are for manufacturing firms only. Output-capital ratio is gross national product in 1972 dollars divided by the net capital stock in 1972 dollars for the mid-years of decades. (For 1970-80, 1976rather than 1975 was used since 1975 was a recession year.) The capital stock was adjusted by the operating rate for manufacturers.

of its plant and equipment right up-to-date (Table III). Industry was also spending increasing amounts on R&D. Yet manufacturers, who account for the vast bulk of business R&D, devoted relatively fewer resources to R&D in the 1970s than they did in the 1960s as measured by R&D as a percent of sales. Relative to the 1960s, that is, productive knowledge represented by R&D spending had to be spread more thinly throughout the economy.

Table III, then, says that U.S. productivity in the 1970s should have been boosted as a result of gradual modernization of the nation's plants and equipment; yet because relatively less R&D was performed, productivity would have been hurt since fewer new productive ideas could have been developed relative to the size of the economy. One way of seeing which effect--modernization or R&D--was stronger is to look at the value of output the country got for every dollar's worth of physical capital it possessed. The last column of Table III shows that this ratio has remained constant over the past three decades, pointing to the conclusion that modernization of the capital stock (as well as improvements in techniques) offset the decline in resources devoted to R&D.

Such a conclusion may be misleading, however, in that R&D pays off only in the future--possibly the distant future--and thus some productivity gains in the 1970s could have come about due to R&D spending in the 1960s. The other side of this coin is that a slowdown in relative R&D spending in the 1970s will hurt productivity in the 1980s. Hence, even continued modernization of the nation's capital stock may not be sufficient to prevent downward pressures on productivity in the coming decade unless R&D spending is stepped back up to at least 2.8% of sales--or by an extra $8 billion or so per year.

In addition to new ideas and incorporating those ideas in new physical capital, another way to spur productivity growth is to support each worker with more and more capital. The more capital each worker has at hand, that is, the more he or she will usually be able to produce in the same number of hours.

For most of the post-war era, the U.S. has been providing workers with increasing amounts of buildings and machinery, as shown in Table IV. The ratio peaked, however, in the mid-1970s as the labor force ballooned and as the sudden rise in energy costs made some capital equipment obsolete. In other words, instead of using more and more capital and energy relative to labor, American industry switched gears around 1975 and began employing increasing numbers of workers to attain its output goals.

The reduction in the capital-intensity of U.S. production was not only a rational stratagem adopted in the face of skyrocketing energy prices. It was also a rational response to the growing supply of labor: From 1950 to 1970 the working-age population grew at an average annual rate of 1.2%; growth from 1970 to 1980, by contrast, was about 1.6%. Meanwhile, not only did the working-age population grow, but so too did the proportion of that population actually seeking jobs. Thus, more people were available to work in the 1970s than previously and more of those available wanted to work. This increase in the labor supply alone would put downward pressure on wage increases, but with OPEC draining wealth from the country and with productivity stumbling due to recession, real weekly earnings of workers actually fell. From 1974 to 1979, the average weekly wage fell by an average of 0.2% per year, while at the same time prices of capital goods were rising at about 9% per year--hence the price inducement for industry to hire workers instead of buying machinery in the second half of the 1970s. In part because of this substitution--because more labor hours were

Table IV. Capital-Labor Ratios, 1950-79

Period	Capital-Labor Ratio	% Change in Ratio Over Previous Period (Annual Rates)
1950-55	6.8	----%
1955-60	7.7	2.5
1960-65	8.6	2.2
1965-70	9.9	2.9
1970-75	11.0	2.1
1975	11.6	2.5
1976	11.4	-1.7
1977	11.4	0.0
1978	11.2	-1.8
1979 (est.)	11.3	0.9

SOURCES: Economic Report of the President; Survey of Current Business; McGraw-Hill Publications Co. Dept. of Economics.

NOTE: The capital-labor ratio is defined here as the net capital stock in billions of 1972 dollars divided by civilian employment in millions.

used to produce a unit of output--the recession-caused productivity problem was compounded by a declining capital-labor ratio.

The productivity problem has already been discussed in terms of output per unit of capital and quantity of capital per worker, but the population figures of Table V add another chapter to the story. The table shows that the proportion of the population aged 16 to 24 grew sharply from 1960 to 1975, and remained at a high level through 1980. Moreover, as young people in the 1970s married later and as increasing numbers of young women expected to earn a living, the proportion of 16-to-24-year-olds in the work force swelled. Youth's weight in the labor pool, therefore, grew even faster than it did in the total population. And since young workers

Table V. Working-Age Population, 1929-2000

Year	Population (Millions) Total	--Age Category-- 16-24	26-64	% Share in Population 16-24	25-64
1929	21.8	19.8	56.9	16.3%	46.7%
1950	152.3	20.2	76.5	13.3	50.2
1960	180.7	21.8	82.9	12.1	45.9
1970	204.9	32.5	90.4	15.9	44.1
1975	213.6	36.0	97.3	16.9	45.6
1980	222.2	37.6	105.8	16.9	47.6
1985	232.9	34.9	115.4	15.0	49.5
1990	243.5	31.5	123.8	12.9	50.8
1995	252.8	30.0	129.7	11.9	51.3
2000	260.4	32.6	134.9	12.5	51.8

SOURCES: Economic Report of the President; Census Bureau projections.

are less experienced than older workers, the average skill level of the labor force declined, contributing to the period's dismal productivity performance.

To sum up, when compared to history--especially to the 1950s and 1960s--the U.S. economy in the 1970s was marked by these negatives:

- Slow growth
- Volatility
- Feeble gains in productivity
- High rates of inflation
- Declining share of resources devoted to R&D

On the positive side, business in the 1970s did allocate sufficient resources to investment to reduce the average age of buildings and machines. By modernizing, business was able to reap the same amount of output per unit of capital as in the 1960s, despite a fall in the relative amount of resources allocated to R&D. At the same time, an unprecendented number of jobs was created, so that as baby boomers flooded into the labor pool social strains were kept at low levels. While absorption of young workers reduced the capital-labor ratio and contributed to the economy's tepid productivity performance, some losses in productivity may in retrospect seem a low price to pay for a relatively smooth absorption of large numbers of inexperienced workers into the economy.

II. Prospects for Growth

Coming off the relatively bad economic performance of the 1970s, key questions for the 1980s arise: Will the economy attain vigorous low-inflationary growth? Will sufficient resources be allocated to R&D and investment? And will productivity growth, as a consequence, regain some vitality?

A good place to begin looking for some answers is in demographic data--more specifically, data on the size and age structure of the population, for today's population will essentially determine growth of the labor force in the next decade. Factoring in other things such as immigration and labor force participation rates, the Bureau of Labor Statistics figures that U.S. employment will grow at an average annual rate of 1.5% in the 1980s, which compares to a 2% annual rate from 1970 to 1980. But since the average work week will presumably continue to shrink, growth of labor hours in the 1980s will be only about 1.2% a year, compared to 1.7% in the 1970s.

Thus, as a source of growth, pure increases in the number of working hours will not contribute as much as they did in 1970-80. If the economy is to grow in the 3+% range as it did in 1950-70, then growth will have to come from productivity gains. More specifically, if labor hours grow by 1.2% per year in the 1980s, productivity must advance by about 2% per year for growth to hit the 1950-70 target. Given the dismal productivity growth of 1.2% per year in the 1970s, is a 2% annual clip possible in the 1980s?

In a broad sense, the two key ingredients of productivity are the amount of output that is produced by each unit of capital (the output-capital ratio) and the amount of capital each worker has at his or her disposal (the capital-labor ratio). The percent growth in productivity, that is, equals the percent change in the output-capital ratio plus the percent change in the capital labor ratio. Add the percent change in labor hours and the result is the economic growth rate.

As noted previously, the output-capital ratio has remained fairly constant over time, so it's a good bet that this constancy will persist into the future. There may be some downward pressure on the ratio in the 1980s due to the declining share of resources allocated to R&D in the 1970s. On the other hand, the output-capital ratio should be getting a boost over the next decade as the labor force matures and its skills improve. Table V points to this maturation: The share of young people (16-24-year-olds) in the population will be falling from about 17% in 1980 to 13% in 1990. Meanwhile, the more productive 25-64-year-olds will comprise better than half the population in 1990, compared to an estimated 47.6% in 1980.

If, in fact, forces working for and against increases in output per unit of capital offset each other, then the full 2% annual advance in

productivity must be wrung out of the capital-labor ratio. What does such a gain mean in terms of investment in plant and equipment over the next decade?

As can be seen back on Table IV, annual increases in the capital-labor ratio of more than 2% were commonplace until 1975, after which declines occurred. If 2% annual growth is to materialize in the 1980s, the capital-labor ratio in 1990 would have to be about 14.0. With employment in 1990 projected at 114 million, that implies a 1990 net capital stock (in 1972 dollars) of $1.6 trillion. Today's net capital stock is roughly $1.1 trillion (in 1972 dollars); thus, the net capital stock must grow by a half trillion dollars over the next ten years, which in 1979 dollars translates into over $85 billion per year.

In order to increase the net capital stock, however, enough expenditure on plants and equipment must first take place to make up for the portion of the capital stock which depreciates every year. Because such expenditures are so large, the net capital stock increases by only about one-fifth to one-fourth as much as does total nonresidential fixed investment. The implication is that nonresidential fixed investment must be at least $343 billion per year (in 1979 dollars) in the 1980s if the capital-labor ratio is to grow enough to boost productivity by 2% per year.

By way of comparison, actual nonresidential fixed investment in 1979 was $254.9 billion--and 1979 was a fairly good year for investment. To make up the shortfall between 1979 investment levels and the target level would require investment to jump by one-third. Is such a dramatic change really possible?

One key to answering this question lies in the amount of funds available for investment. Table VI shows the sources of investable funds and the amounts they supplied in 1979. By making reasonable "high investment" assumptions about increases in savirgs--assumptions based on past savings levels--the chances of an extra $88 billion being available in the 1980s can be assessed.

For example, personal saving as a percent of disposable personal income sank to 4.5% in 1979, compared to rates exceeding 7% in the early 1970s. So if the 1979 saving rate were 7.5%, personal saving would have been $122 billion instead of $72.8 billion, yielding an increase of nearly $50 billion.

Business savings--i.e., retained earnings--were about 11.7% of gross national product in 1979. The figure has not fluctuated

Table VI. Sources of Investment Funds

Sources	Billion $ 1979	Billion $ "High Investment Scenario"
Personal Saving	$ 72.8	$122.0
Business Saving	276.0	284.0
Federal Government	-10.4	21.5
State & Local Government	24.4	24.4
TOTAL	$364.0	$451.9

SOURCES: Economic Report of the President; McGraw-Hill Publications Co. Department of Economics.

substantially over the past few decades, but has been a little higher. Assuming 12% for 1979, business saving would have been $284 billion--$8 billion more than actually occurred.

The federal government in 1979, as in every year since 1969, was a net user of funds. In 1969, however, the government ran a rare surplus, to the tune of $8.5 billion or 0.9% of GNP. If the government in 1979 also ran a surplus of 0.9% of GNP, it would have added $21.5 billion to the pool of investable funds. Instead, the federal government drained the pool of $10.4 billion.

Finally, state and local governments did show a surplus in 1979, as they have for the past decade, and since $24.4 billion is a healthy surplus, it will remain unchanged in this exercise.

The results of all these assumptions lead to a "high investment scenario," shown in the second column of Table VI. Under these assumptions, the economy's gross savings increase $88 billion over the actual 1979 figure. If all of that $88 billion were allocated to business investment, and if this pattern of saving and investment were continued over the next ten years, the economy's capital-labor ratio would rise nearly fast enough to boost economic growth to about 3.2% per year.

These estimates are rough, of course, but if anything they paint an overly optimistic view of potential investment and growth. First, they assume that peak levels of saving will be sustained for an entire decade. Secondly, the estimates assume that even if such peak savings were forthcoming, they would all be allocated to business investment, rather than being split between business and residential investment. Traditionally, one-third or so of fixed investment has gone to housing. (And in the 1980's, that share will likely increase due to the large number

of baby boomers expected to enter the housing market.) If such a pattern were to persist into the future, even an $88 billion increase in savings would only mean an extra $59 billion available for investment in business plant and equipment. Under this assumption, the net capital stock in 1990 would be nearly $1.56 trillion, yielding a capital-labor ratio of 13.7--1.8% a year growth. Coupled with 1.2% annual growth in labor hours, productivity growth of 1.8% yields an economic growth rate in the 1980s of 3% per year at best.

If, on the other hand, investment continues to grow by the same amount (in real terms) as it did in 1979, productivity would grow at only 1.3% a year in the 1980s, reducing potential growth to just 2.5% annually.

Whatever happens, it is hardly likely that the 1980s will be looked back on as go-go years. Even an optimistic view suggests that unless everything goes "right," growth could fall well below the 1960s' rate and even below the sub-par pace of the 1970s.

The rest of this report will deal with those "right" choices that society will have to make if a "maximum" 3% growth is to be attained in the next decade.

IV. Choices for Growth

There are at least three political-economic questions underlying America's prospects for growth in the 1980s: (1) Will incentives be strong enough to spur the private sector savings needed to finance capital investment? (2) Will the federal government contribute to capital resources, or will it continue to absorb such resources from the private sector? More generally, will government choose efficiency as the major theme of its economic policy, or will it continue to hold other goals more valuable? (3) Will inflation return to levels sufficiently low to encourage

business confidence in longterm planning, the type of planning which underlies investment decisions? More broadly, will the economic volatility of the 1970s be controlled so that business' time horizon can be extended, thereby leading to increased investment in plant and equipment?

While these three points are hardly neat compartments totally separate from one another, they will be taken up one at a time.

Over the past few years, the country has gotten into a low saving syndrome. Early in the 1970s, people were saving more than 7% of their disposable income; by 1979, the saving rate had fallen by about one half. If this trend were to continue, or if the saving rate remains at this low level, insufficient funds would be forthcoming from the household sector to support the kind of investment needed to stimulate 3% growth.

In the 1980s, however, the percent of income saved should be on the rise. And again, the reason lies in the demographics. Typically, young people spend heavily to acquire initial stocks of things like autos, houses, and dishwashers. (In fact, young people typically spend more than they earn.) And it was this group of non-savers that wielded the biggest demographic clout in the 1970s: As the baby boom generation moved into young adulthood, that is, the saving rate dropped.

The counterpart to the youth boom of the 1970s will be the middle age boom of the 1980s. And typically, as people grow older, they save increasing portions of their after-tax income. The rate of saving declines somewhat in households headed by persons sixty-five and over, but the rate is still positive. Thus, as the baby boom matures, life cycle saving patterns will work toward an increase in the rate at which the nation saves.

Besides age, other factors also affect the consumer's saving rate, such as the inflation rate and the economic growth rate. As inflation

heats up, people may forget about saving and rush to buy before prices rise even further; and as the growth rate slows, people tend to dip into savings to maintain their standards of living. With growth in the 1980s expected to be modest at best, people may decide to save less. On the other hand, if inflation abates somewhat (as argued later) the saving rate could get a boost.

The other piece of private sector savings is business retained earnings. Will profits be high enough in the 1980s to allow firms to pay out an acceptable level of dividends while retaining sufficient funds for investment in new plant and equipment and in R&D? Meanwhile, if a maturing population is saving a greater percentage of its income--thus spending a smaller percentage--will there be enough demand to induce companies to expand?

To answer the second question first: While saving is expected to rise both absolutely and as a percentage of income, consumer spending should decline only in percentage terms. For as the population matures and increases its saving rate, it will also be passing through age brackets in which incomes rise. The typical American family, that is, should be more affluent than ever in the 1980s, in part because of the tremendous number of household heads who will be in their high earning years. (Moreover, as in the 1970s, the number of two-income families will likely be on the rise.) As a consequence, even though the saving rate increases, personal consumption expenditures should grow adequately to spur business expansion.

Investment in the '80s will also get a boost from firms' efforts to produce and install more energy-efficient plant and equipment. For not only will OPEC-priced petroleum continue to make business conservation-minded, but slower growth of the labor force will make it harder than in the 1970s simply to hire some workers instead of buying more machinery.

Now, will business have the funds for investment? As argued above, some increase in investable funds will be forthcoming from personal savings. But the scenario which leads to 3% annual growth in the next decade also includes the assumption that business saving will increase, and such an assumption seems realistic too. The realism is based on the tenor that national economic debate has taken in recent years: With an economy growing at well over 3% and productivity growing at nearly 3% a year in the 1950s and '60s, politicians understandably were not terribly worried about helping out corporations. But after the intervention of an energy crisis, a severe recession, double-digit inflation, and a sharp decline in productivity growth, politicians (and economists, too) began to suspect that something might be wrong with the way the economic system allocated funds between consumption and investment, and between the private and public sectors. Thus, economic discussion of late has begun to focus on the supply side--the incentives and disincentives to save and invest, among which are corporate tax rates, investment tax credits, and depreciation charges. As the economy continues to show serious problems, it seems reasonable to assume that some supply-side suggestions for boosting investment by reducing business taxes (i.e., increasing business savings) will eventually work their way into legislation.

The argument here, then, is that both consumers and business can be expected to raise their rates of saving in the next decade, and that these savings in turn could make possible the capital investment required for 3% annual growth. This expectation, however, is conditional on the "right" answers to points (2) and (3) above.

The "right" answer to point (2)--federal government's role--is that government cease to drain investable funds from the nation's pool of

savings. And, again because of the shift in political debate in the late 1970s, it is not unreasonable to assume that government's share of national resources will decline in the 1980s. As the new decade begins, in fact, both major political parties endorse a policy of holding the line on federal spending.

Moreover, there seems to be growing awareness among politicians that the U.S. economic lead over other nations narrowed considerably in the 1970s; and that awareness should lead (already has led, to some extent) to reexamination of government economic policies in general, not just with regard to budget deficits. The broad economic policy choice that society, through its politicians, will have to make in the 1980s is whether America should be reindustrialized, or whether it should continue its decline relative not only to its own history, but also relative to the rest of the world.

This choice will be made in terms of such actions as relaxing environmental and other regulations and providing tax incentives for investment (reindustrialization), or on the other hand, actions such as increased government enforcement of "non-productive" investment and further passage of regulations that interfere with economic efficiency (deindustrialization). The deindustrialization path was chosen in the mid-to-late 1960s in the interests of a cleaner, safer environment and a more egalitarian economy. Society was able to choose that path--the path which sacrifices some efficiency for other goals considered socially desirable--because the economy was strong. Deindustrialization, that is, seemed affordable. But since the time that route was chosen, a decade of economic problems has intervened, leading to a change in political climate. It is assumed here that the will of the majority is shifting

toward policies geared to boost economic growth--to policies of reindustrialization.

Government does, of course, have a key role to play in boosting growth by creating a stable economic environment. For if inflation distorts business' long-term assessments of costs and revenues, and if steep recessions make business wary of the future, long-range strategies--such as heavy spending on capital and on R&D--can give way to short-term gambits that could dim future prospects. Thus, not surprisingly, investment and R&D got less emphasis in the economically volatile 1970s then they did in the relatively stable 1960s. To stimulate business to make the necessary expenditures on research and on capital in the 1980s, inflation must abate and business cycles must be damped. Is there any hope for such things, which after the 1970s must seem equivalent to utopia?

Taking an optimistic view, there are grounds to hope that the inflation-recession juggernaut can be controlled to some extent. The most immediate piece of evidence on the inflation-fighting side is the October, 1979 switch in Federal Reserve Board policy. The monetary stringency promised then has by and large been delivered, and the Fed asserts that it will continue to hold to its nonexpansionary policy. Shoring up this promise is the fact that the Fed chairman, who strongly backs the new policy, has his job at least until 1983. Moreover, an inflation-weary public seems ready to back such a policy. A reversal of this policy in the 1980s would move the U.S. much closer to an era of hyperinflation and, consequently, a heightening of social tensions. It is not likely that the Fed would want to pursue such a path.

At the same, inflation will not be whipped overnight. Just as it took a decade for inflation to build to heady heights, it is likely that the wind-down will also take a long time. The prudent Fed policy, after all, is one of gradualism in reducing monetary growth rates; a sudden jamming of the monetary brakes to stop inflation quickly would only plunge the economy into severe recession. Thus, the inflation forecast at the end of this report shows price increases (measured by the GNP deflator) falling gradually from 9% in 1980 to 6% by the end of the decade.

Besides Fed promises to fight inflation there is other support for the view that the economy will be more stable in the 1980s than in the 1970s. And, once again, demographics provide the reason. Historically, unemployment has been three times higher for teenagers than for the labor force as a whole. With the labor force maturing in the 1980s--with teenagers forming a smaller percentage of the total force, that is--the overall unemployment rate in the 1980s should be lower on average than in the 1970s.

The unemployment rate last decade averaged more than 5 1/2%. In the 1980s, the Bureau of Labor Statistics expects unemployment to average close to 4 1/2%. Since government economic policy is heavily influenced by the unemployment rate, a reduction in this politically sensitive number (due at least in part to demographics) will help diminish pressure on Congress and on the Fed to stoke up the economy--even at the risk of kicking off an inflationary spiral. Feeling less political pressure, economic policymakers will be able to pay more attention to the goal of stable, non-inflationary growth. The upshot here is that government in the 1980s is expected to have an extra degree of freedom in trying to maintain a steady-as-you-go course; and that, conversely, government will resort less

to stop-go policies such as rapidly reining in monetary growth, or passing major tax cuts after the point at which they are really needed.

The arguments of this section, in essence, are optimistic. They say: (1) Savings will rise sufficiently to allow business to outfit labor with enough capital to raise productivity above the 1970s' rate; (2) Government will support pro-growth policies; and (3) Stable growth at rates of inflation lower than in the 1970s will induce business to adopt investment and R&D strategies that pay off in the latter part of the 1980s.

The arguments are also optimistic in what they do not say. For example, they don't say that tight energy supplies in the 1980s could be a constraint on growth--even though the outlook for domestic crude oil production is not very bright, development of alternative energies will take a long time, and supplies of Mideast oil are subject to political shocks. Dependence of the U.S. on foreign oil also points to the increased internationalization of the American economy, which means that the value of the dollar depends more and more on foreigners' decisions. Thus, another growth constraint in the '80s could come from high interest rates needed to bolster a weak dollar.

Having noted the optimism of the "high investment" arguments, then, it should be stressed that even if events develop as assumed, growth in the 1980s would at most be 3% per year. Thus, the risk of this forecast being wrong is on the downside. Growth could easily average only 2.5% a year--or lower. Assuming that some shock to the economy--another OPEC?--again pushes the system onto an inflation-recession whirligig, or that the body politic opts myopically for short-term gains at the expense of future returns, then growth might average only 2%. To put these numbers in

perspective, a growth rate of 2% instead of 3% over the course of the decade means the nation's material wellbeing in 1990 would be reduced by 12.5%--or by nearly $300 billion in 1979 dollars, not a trivial figure.

IV. Forecasts: Good, Bad, Indifferent

The "high investment" secenario, as noted previously, is based on optimistic assumptions. It does seem probable that the 1980s will witness some shift of national resources toward investment and away from government and consumption. But a sustained increase in investable funds--as shown in Table VI--would represent a sharp break with the historical record, and therefore the "high investment" scenario does not seem the most probable one for the 1980s.

By contrast to this "high investment" path, the economy of the 1980s--especially the early 1980s--could continue to muddle along as in the 1970s. Habits change slowly, and laws and practices may change much more slowly than envisioned in the "high investment" scenario. (Moreover, even if supply-side tax cuts were enacted next year, they would take some time to produce results.) Thus, a "business as usual" scenario was developed, on the assumption that the performance of the 1970s foreshadows that of the 1980s.

In addition, an amalgam of the "high investment" and "business as usual" scenarios--a "best guess" scenario--is presented at the end of this report along with the other forecasts. (The three scenarios are presented for GNP, consumption, investment, and industrial production; forecasts of population, households, employment, and inflation are the same for each scenario.) Since the "high investment" path requires that the economy and the body politic change course rather abruptly, the "best guess" forecasts give greater weight to the "business as usual" scenario.

A comparative summary of the three scenarios is shown in Table VII. In the "high investment" scenario, government chooses pro-growth policies

Table VII. Projected Growth Rates

Scenario	GNP	Consumption	Investment	Industrial Production
	--------% Annual Average Growth----------			
High Investment				
1979-85	2.5%	2.4%	3.6%	3.5%
1985-90	3.6	3.6	4.5	4.5
1990-95	3.5	3.5	3.5	3.7
1979-90	3.0	2.9	4.0	4.0
Business As Usual				
1979-85	2.2	2.3	1.0	1.4
1985-90	2.6	2.6	2.0	2.1
1990-95	2.5	2.5	2.5	2.4
1979-90	2.4	2.4	1.4	1.9
Best Guess				
1979-85	2.3	2.4	2.2	2.1
1985-90	2.8	2.8	2.8	2.8
1990-95	2.9	2.9	2.7	2.9
1979-90	2.6	2.5	2.5	2.4

and business investment takes off. Accounting for an estimated 10.5% of GNP in 1980, investment rises to 12% by the late 1980s. (The last time anything like that happened was in 1929.) Meanwhile, consumption as a share of GNP declines from an estimated 64.8% of GNP in 1980 to 64.1% in the late 1980s. The government's share of GNP also declines.

Under the "business as usual" assumptions, investment as a share of GNP declines to 9.7% in the late 1980s, while consumption rises marginally to 64.9%. In the "best guess" scenario, investment rises from 10.5% of GNP in 1980 to 10.7%, while consumption's share declines from 64.8% in 1980 to 64.6% in 1990.

GNP, Consumption, Investment, Production:
History and "Best Guess" Projections

	--------Billions of 1980 Dollars---------			
	Gross National Product	Personal Consumption Expenditures	Nonresidential Fixed Investment	Industrial Production (Index, 1980=100)
History				
1967	1820.3	1089.8	193.5	69.7
1968	1899.9	1144.4	201.9	74.1
1969	1948.7	1184.1	213.7	77.5
1970	1942.4	1208.5	205.7	75.1
1971	2000.6	1250.1	201.9	76.4
1972	2115.5	1324.4	218.3	83.4
1973	2230.9	1387.1	244.9	90.4
1974	2199.8	1374.5	244.1	90.1
1975	2171.8	1399.6	212.4	82.1
1976	2299.5	1482.7	222.5	90.9
1977	2421.4	1557.0	241.8	96.3
1978	2527.4	1627.6	262.0	101.8
1979	2685.9	1670.4	278.3	106.0
Projections				
1980	2546.3	1649.7	267.6	100.0
1981	2566.7	1662.6	254.0	100.9
1982	2707.9	1754.1	269.4	109.1
1983	2821.5	1825.5	287.8	113.5
1984	2894.7	1872.9	306.8	116.7
1985	2969.7	1921.4	317.8	120.0
1986	3052.9	1972.1	326.6	123.4
1987	3138.4	2027.3	335.8	126.8
1988	3226.3	2084.2	345.2	130.4
1989	3317.3	2142.5	355.3	134.0
1990	3411.2	2202.5	364.8	137.8
1995	3935.4	2544.8	416.9	159.0

GNP, Consumption, Investment, Production:
History and "Business as Usual" Projections

	Billions of 1980 Dollars			
	Gross National Product	Personal Consumption Expenditures	Nonresidential Fixed Investment	Industrial Production (Index, 1980=100)
History				
1967	1820.3	1089.8	193.5	69.7
1968	1899.9	1144.4	201.9	74.1
1969	1948.7	1184.1	213.7	77.5
1970	1942.4	1208.5	205.7	75.1
1971	2000.6	1250.1	201.9	76.4
1972	2115.5	1324.4	218.3	83.4
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1978	2627.4	1627.6	262.0	101.8
1979	2685.9	1670.4	278.3	106.0
Projections				
1980	2546.3	1649.7	267.6	100.0
1981	2566.7	1662.6	254.0	100.9
1982	2707.9	1754.1	268.1	109.1
1983	2802.7	1813.3	280.3	112.9
1984	2878.4	1863.8	290.7	115.1
1985	2955.2	1915.0	295.5	117.5
1986	3031.5	1965.0	300.1	120.0
1987	3109.7	2016.1	304.8	122.5
1988	3189.9	2068.5	309.4	125.1
1989	3272.3	2122.3	317.4	127.8
1990	3356.7	2178.5	325.6	130.5
1995	3797.8	2464.8	368.4	146.9

GNP, Consumption, Investment, Production:
History and "High Investment" Projections

	Billions of 1980 Dollars			
	Gross National Product	Personal Consumption Expenditures	Nonresidential Fixed Investment	Industrial Production (Index, 1980=100)
History				
1967	1820.3	1089.8	193.5	69.7
1968	1899.9	1144.4	201.9	74.1
1969	1948.7	1184.1	213.7	77.5
1970	1942.4	1208.5	205.7	75.1
1971	2000.6	1250.1	201.9	76.4
1972	2115.5	1324.4	218.3	83.4
1973	2230.9	1387.1	244.9	90.4
1974	2199.8	1374.5	244.1	90.1
1975	2171.8	1399.6	212.4	82.1
1976	2299.5	1482.7	222.5	90.9
1977	2421.4	1557.0	241.8	96.3
1978	2627.4	1627.6	262.0	101.8
1979	2685.9	1670.4	278.3	106.0
Projections				
1980	2546.3	1649.7	267.6	100.0
1981	2566.7	1662.6	254.0	100.9
1982	2732.2	1754.1	273.2	110.0
1983	2854.4	1832.5	299.7	118.8
1984	2925.7	1879.8	321.8	124.5
1985	2997.0	1924.8	344.7	130.3
1986	3086.1	1981.3	362.6	136.2
1987	3190.5	2047.5	382.9	142.3
1988	3305.1	2120.2	396.6	148.7
1989	3434.9	2202.6	412.2	155.4
1990	3577.5	2293.2	429.3	162.4
1995	4249.8	2719.9	510.0	194.8

Population, Households, Employment, Inflation:
History and Projections

History	Population (Millions)	Households (Millions)	Civilian Employment (Millions)	GNP Price Deflator (Index, 1980=100)
1967	198.7	59.2	74.4	43.6
1968	200.7	60.8	75.9	45.6
1969	202.7	62.2	77.9	47.9
1970	204.9	63.4	78.6	50.5
1971	207.1	64.8	79.1	53.1
1972	208.8	66.7	81.7	55.3
1973	210.4	68.2	84.4	58.5
1974	211.9	69.8	85.9	64.2
1975	213.6	71.1	84.8	70.4
1976	215.2	72.9	87.5	74.0
1977	216.9	74.1	90.5	78.5
1978	218.7	76.0	94.4	84.2
1979	220.6	77.3	96.9	91.6
Projections				
1980	222.2	79.5	96.5	100.0
1981	224.2	81.1	98.5	109.0
1982	226.3	83.1	102.0	118.6
1983	228.5	84.6	103.9	128.8
1984	230.7	86.1	105.9	139.1
1985	232.9	87.7	107.9	149.9
1986	235.1	89.3	109.1	161.1
1987	237.2	90.9	110.3	172.8
1988	239.4	92.4	111.5	184.5
1989	241.5	93.9	112.7	196.5
1990	243.5	95.2	114.0	208.2
1995	252.8	101.4	118.6	275.3

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ERRATA

In the tables at the back of "U.S. Business Outlook, Long-Term" there are two typographical errors in the gross national product (GNP) columns. In 1978 and 1979, GNP should be 2527.4 and 2585.9, respectively, rather than 2627.4 and 2685.9.

ERRATA